DOCUMENT RESUME

ED 179 745 CE 023 397

AUTHOR Morton, Raymond H.; McCracken, J. David
TITLE Supervised Occupational Experience Programs and Achievement of Students in Vocational Agriculture. Summary of Research Series, SR 16.
INSTITUTION Ohio State Univ., Columbus. Dept. of Agricultural Education.
PUB DATE 79
NOTE 14p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; Achievement Tests; *Agricultural Production; Farm Visits; Grade 11; Grade 12; Multiple Regression Analysis; *Program Effectiveness; Questionnaires; *Vocational Agriculture; *Work Experience Programs
IDENTIFIERS Ohio (Columbus); *Supervised Occupational Experience Programs

ABSTRACT

The purpose of the study was to determine the relationship between the quality of a supervised occupational experience (SOE) program (in terms of income and scope of program) and level of academic achievement on a test measuring technical knowledge in production agriculture. A fifty-item multiple choice achievement test was administered to eleventh- and twelfth-grade students in ten sampling units consisting of classes of production agriculture in schools within a fifty-mile radius of Columbus, Ohio. A total of 206 students was tested. An additional questionnaire, designed to measure the quality of the SOE program, was also administered. Pearson product moment correlation coefficients and step-wise multiple regression analysis were used to test the five research hypotheses of the study. (Data is presented in tables 2 and 3.) Findings revealed that if extraneous effects of scholastic aptitude, opportunity, year in school, and instructor projects visits are statistically controlled, higher quality SOE programs are likely to result in greater learning achievement. It is recommended that (1) measurement of learning for vocational agriculture students be based on performance in laboratory, classroom, and SOE programs as well as on tests; (2) students be encouraged to develop programs which provide the correct experiences in the correct proportion; (3) students with limited opportunity be encouraged to use school laboratories or take advantage of farm placement; and (4) amount of attention given by instructors through project visits be increased. (FP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED179745

SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAMS AND ACHIEVEMENT OF STUDENTS IN VOCATIONAL AGRICULTURE

Raymond H. Morton and J. David McCracken

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Raymond H. Morton

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

INTRODUCTION

Supervised occupational experience (SOE) for students enrolled in vocational agriculture programs is generally recognized as an accepted principle and necessary practice by most agricultural educators. Although most might agree that supervised occupational experience is important for learning, there seems to be little empirical evidence to link the two factors.

Supervised occupational experience has continued because most agricultural educators believe that it has accomplished one or more of the following purposes (Peterson and McCreight, 1973):

1. ... (SOE) is an extension of the classroom;
2. encourages use of approved practices;
3. promotes close cooperation between agribusiness and education;
4. informs the teacher about the situation of the student through home visits;

CE023 390

5. helps students see the relevance of instruction; and,
6. makes effective teaching in a real-life situation.

Supervised occupational experience should be as important as classroom and laboratory instruction. Research was needed to demonstrate the relationship of supervised occupational experience to learning achievement.

PURPOSE AND OBJECTIVES

The primary purpose of this study was to investigate the relationship between the quality of supervised occupational experience programs, as measured in terms of student income and project scope, and the level of achievement on a multiple-choice test designed to measure technical knowledge in production agriculture for high school students enrolled in production agriculture.

Recognizing that there were many variables associated with achievement, independent variables of an extraneous nature were also measured. Therefore, this study included the following variables:

1. Independent variables

   a. Quality of supervised occupational experience student projects--main variable
   b. Opportunity to engage in supervised occupational experience
   c. Student's cumulative grade point average
   d. Number of completed years in vocational agriculture
   e. Number of instructor project visits received by student

2. Dependent variable

   a. Level of achievement in technical knowledge in production agriculture

METHODOLOGY

The target population of this study was eleventh and twelfth grade students enrolled in production agriculture in central Ohio high schools.

Ten schools were randomly selected as primary sampling units. A primary sampling unit was defined as an eleventh or twelfth grade class in a high school that offered a production agriculture program within a 50 mile radius of Columbus, Ohio. Secondary sampling units consisted of any students enrolled in the classes just mentioned. A total of 206 students--117 eleventh grade students, 86 twelfth grade students, and three tenth grade students--participated in the study. The tenth grade students were enrolled in eleventh and twelfth grade classes.

A fifty-item, multiple choice, paper-and-pencil test was administered

to all subjects to measure the dependent variable, achievement in technical knowledge. The Ohio Model Course of Study for Production Agriculture (Asche and Schuman, 1977) was used to determine the areas of technical knowledge to be tested. Item analysis of the test produced a mean of 31.6, a standard deviation of 7.2, a Kuder-Richardson 20 of .82, and a discrimination index of .36.

A questionnaire was administered to measure these independent variables: quality of the student's supervised occupational experience project; student's opportunity to engage in supervised occupational experience; the student's cumulative grade point average; the number of completed years in vocational agriculture; and, the number of instructor project visits received by the student. The format for requested information pertaining to quality and opportunity resembled the Ohio FFA State Degree Application.

Measurement of the Quality of SOE

A numerical score was devised based upon research by McMillion and Auville (1977):

$$Q = (I_{78} - I_{77}) + \frac{I_{77}}{100} + \frac{(PMWU_{78} - PMWU_{77}) + PMWU_{77}}{5}$$

Where: Q = Quality score of supervised occupational experience (SOE) program

I_{78} = SOE Estimated Labor and Management Income for 1978

I_{77} = SOE Labor and Management Income for 1977

$PMWU_{78}$ = Estimated supervised occupational experience Productive Man Work Units for 1978 (PMWU)

$PMWU_{77}$ = Supervised occupational experience Productive Man Work Units for 1977

Income was divided by 100, and PMWU was divided by 5, to reduce the computed quality score to a more manageable size for subsequent statistical treatment.

Measurement of the Opportunity to Engage in SOE

A numerical index was devised:

$$O = (x_1 + x_2 + x_3 \ldots x_{12})$$

Where O = Opportunity index; and x_1 through x_{12} were point values assigned to variables associated with the opportunity of a student to engage in supervised occupational experience programs.

Table 1 is a complete list of all opportunity factors and their point values.

Table 1

Variables Used in Computing Supervised Occupational Experience Opportunity Index[a]

Variables	Label	Point Values
X_1	Father engaged in off-farm occupation, fulltime	2
X_2	Zero acreage on family farm	2
X_2	<250 acres on family farm	1
X_3[b]	Sibling(s) enrolled in vo-ag	1/sibling
X_4[b]	Sibling(s) enrolled in 4-H	1/sibling
X_5[b]	Sibling(s) in family	1/sibling
X_6	Parents offer "much resistance"[c]	2
X_6	Parents offer "some resistance"	1
X_7	Teacher offers "much resistance"	2
X_7	Teacher offers "some resistance"	1
X_8	Miles traveled by student, home-project site, >6 miles	1
X^9	Student share of family farm business, > 25%	1
X^{10}	Student share of family farm, >25%	1
X^{11}	Student engaged in off-farm agri-business	1
X^{12}	Limited opportunity of student, as identified by instructor	1

[a]High Opportunity Index = less student opportunity to engage in SOE

[b]Maximum of 4 points

[c]Resistance to improve or expand SOE as perceived by the student

Table 2

Pearson Product Moment Correlation Coefficients
for the Major Variables

	No. Completed Years in Vo Ag	No. Instructor Project Visits	Student GPA	SOE Opportunity Index[a]	SOE Quality Score
No Instructor Project Visits	-.0268				
Student GPA	.1775***	.1637***			
SOE Opportunity Index	-.1422**	-.1114*	-.1543***		
SOE Quality Score	.1641***	.1537**	.0455	-.1043*	
Achievement Test	.3035****	.2038***	.5257****	-.2932****	.2021***

[a]High Opportunity Index = less student opportunity to engage in SOE.

*$p < .10$

**$p < .05$

***$p < .01$

****$p < .001$

Instructor Project Visits

An instructor project visit included all occasions during a 12-month period when an instructor and a student discussed the management of the student's SOE program.

Data Gathering Procedures

Data gathering occurred in ten schools in a three-week period during April and May, 1978. Every instrument was administered by the researcher.

FINDINGS

Relationships Among the Major Variables in the Study

Pearson product moment correlation coefficients, and step-wise multiple regression analysis were used to test the five research hypotheses of the study.

Pearson product moment correlation coefficients. Pearson product moment correlation coefficients were computed for all possible pairs of major variables in this study. This data is presented in Table 2.

There was a positive relationship between achievement test scores, and:

1. quality scores of supervised occupational experience programs ($r = .20$, $p < .01$),
2. opportunity to engage in supervised occupational experience programs, as measured by an opportunity index ($r = .29$, $p < .001$);
3. cumulative grade point average ($r = .53$, $p < .001$);
4. the number of years completed in vocational agriculture ($r = .30$, $p < .001$), and,
5. the number of project visits received by students from their instructor in 12 months' time ($r = .20$, $p < .01$).

Step-wise multiple regression analysis. Using step-wise multiple regression analysis, each independent variable was entered in single steps to the multiple regression equation. This procedure allowed the researcher to partial out the effects of a single variable at each step, while all variables were statistically controlled. These data are presented in Table 3. Of the total proportion of explained variation in achievement (.3816):

1. Seventy-one percent of the variance could be explained by cumulative grade point average (.2708/.3816);
2. An additional 14 percent of the variance could be explained by

Table 3

Step-Wise Multiple Regression of Achievement Test Score on the Independent Variables

Independent Variables Entered Step-Wise in Equation[a]	R	R^2	R^2 Increment	Standardized Regression Coefficient (Beta)	F
Student GPA	.5204	.2708	.2708	.4410	83.65**
No. Completed Years in Vo-Ag	.5681	.3228	.0519	.1867	16.04**
SOE Opportunity Index	.6011	.3613	.0386	-.1856	11.91**
SOE Quality Score	.6130	.3758	.0145	.1118	4.47*
No. Instructor Project Visits	.6178	.3816	.0058	.0784	1.80

[a]Each variable was added to the regression equation in a single step.

*$p < .05$

**$p < .01$

**$F = 23.58$ for all variables taken together.

number of years completed in vocational agriculture (.0519/.3816);

3. An additional 10 percent of the variance could be explained by opportunity to engage in supervised occupational experience programs .0386/.3816);

4. An additional 4 percent of the variance could be explained by quality of supervised occupational experience programs (.0145/.3816); and,

5. An additional 1 percent of the variance could be explained by the number of project visits received by students from their instructor (.0058/.3816).

An F statistic was computed to test for significance. Achievement was significantly related to opportunity to engage in supervised occupational experience, cumulative grade point average, and number of years completed in vocational agriculture at the .01 level; quality of supervised occupational experience programs was significant at the .05 level; but, the number of project visits received by students from their instructors in one year was not statistically significant.

CONCLUSIONS

Learning by doing is important for the successful education of vocational agriculture students. If the extraneous effects of scholastic aptitude, opportunity, year in school, and instructor projects visits are statistically controlled, higher quality SOE programs are likely to result in greater learning achievement.

RECOMMENDATIONS

1. The measurement of learning for vocational agriculture students should be based upon an actual performance that utilizes all skills and knowledge acquired in the classroom, laboratory, and the student's SOE program. Measurement of achievement should not be confined to multiple-choice tests of technical knowledge.

2. A procedure should be devised to equate students with dissimilar opportunities and project scope. Smaller programs, carefully managed by the student, may not result in high labor income, however, these smaller programs may provide high quality experiences that expose the student to the correct experiences, in the correct proportion, and in the correct sequence.

3. The use of school laboratories and farm placement are essential for students with limited opportunity. The quality of SOE programs is influenced by opportunity, which in turn is largely dependent on the

student's family situation. The student and teacher have little control over the factors contributing to family situations.

4. The quality of supervised occupational experience programs can be improved by increasing the amount of attention given by the instructor through project visits.

BIBLIOGRAPHY

Asche, W.E. and Schuman, F.E. Ohio Model Course of Study for Agricultural Production: Grades 9-12. State Department of Education, Division of Vocational Education, Agricultural Education Service. Ohio Agricultural Education Curriculum Materials Service, 1977.

Barlow, M.L. The Philosophy for Quality Vocational Education Programs (fourth yearbook). Washington, D.C.: American Vocational Association, 1974.

Bass, B.M. and Vaughn, J.A. Training in Industry: The Management of Learning. Belmont, Calif.: Wadsworth, 1966.

Benjamin, G.R. Significant Job Success Factors Found in Work Study Programs in Five Major New York Cities (final report). New York State Department of Education, July 1967. (ED 117-184)

Binkley, H. and Hammonds, C. Experience Programs for Learning Vocations in Agriculture. Danville, Illinois: Interstate, 1970.

Handbook of Procedures for Selecting State FFA Degree Recipients--Production, A. The Ohio State Board of Education, the Ohio State Department of Education, the Agricultural Education Service, Ohio State FFA Association (no publication date given).

McMillion, M.B. and Auville, M.K. Factors Associated with the Success of Supervised Farming Programs of Virginia High School Students. Blacksburg, Virginia: Virginia Polytechnic Institute and State University, June 1976. (Project No. 848808)

Morton, Raymond H. "The Relationship Between the Quality of Supervised Occupational Experience Programs and Achievement of Students in Vocational Agriculture." Unpublished Ph.D. Dissertation, The Ohio State University, 1978.

Peterson, R.L. and McCreight, M.G. Are Supervised Occupational Experience Programs Really that Important? Agricultural Education, 1973, 45, 11; 245-246.

Phipps, L.J. Handbook on Agricultural Education in Public Schools. Danville, Illinois: Interstate, 1972.

Roediger, R., McGee, M.B. and Householder, L. Appendix C: Curriculum Development Basic to the Training of Individuals for Employment in Agribusiness, Natural Resources, and Environmental Protection (final report). The Ohio State University, Ohio Career Education and Curriculum Management Laboratory in Agricultural Education, 1976.

State FFA Degree Application. The Ohio State Board of Education, The Ohio State Department of Education, The Division of Vocational Education, Agricultural Education Service, Ohio State FFA Association (no publication date given).

Todd, J.D. and Phipps, L.J. "Relationships Among Factors Associated with Occupational Experience Programs." Agricultural Education, May 1973, 45, 11; 255.

Warmbrod, J.R. and Phipps, L.J. Review and Synthesis of Research in Agricultural Education. The Ohio State University, The Center for Research and Leadership Development in Vocational and Technical Education, August 1966.

SUMMARY OF RESEARCH SERIES

Supervised occupational experiences, (SOE) programs are considered an essential element in programs of Vocational Agriculture. The belief that supported SOE was that it furthered learning. The researchers, through this study, addressed the relationship between the quality of the SOE program and learning. These results should prove beneficial in verifying the belief maintained in the profession.

This summary is based on a Doctor of Philosophy program by Raymond H. Morton under the direction of J. David McCracken. Dr. McCracken is currently a Professor at The Ohio State University. Dr. Morton is an Assistant Professor at The Pennsylvania State University. Special appreciation is due Martin McMillion, Associate Professor, Agricultural Education Program, Virginia Polytechnic Institute and State University; T. R. Miller, Associate Professor, Agricultural Education Program, Department of Occupational Education, North Carolina State University, and Lowell Hedges, Assistant Professor, Department of Agricultural Education, The Ohio State University for their critical review of this manuscript prior to its publication.

Research has been an important function of the Department of Agricultural Education since it was established in 1917. Research conducted by the Department has generally been in the form of graduate theses, staff studies and funded research. The purpose of this series is to make useful knowledge from such research available to practitioners in the profession. Individuals desiring additional information on this topic should examine the references cited in the bibliography.

Larry E. Miller, Professor
Department of Agricultural Education

SR 16 1979